

STAGING NOTES
41st FLOOR - NORTH
TOWER ONE
DRAWINGS M-7 - M-10

- 1 REMOVE STAGE 1 SECTION OF EXISTING SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 REMOVE EXISTING 80x45 MAKE-UP AIR DUCT.
- 3 INSTALL EXHAUST FAN E-41-20 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 4 REMOVE EXISTING FAN E-41-20 AND RELATED DUCTWORK.
- 5 INSTALLATION OF ACS-41-1 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS AND ACS/ACWR PIPES ARE RELOCATED AS REQUIRED.
- 6 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 7 INSTALL ACS-41-1 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 8 REMOVE EXISTING REHEAT COILS RCS-41-1 AND RCS-41-2 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 9 COMPLETE INSTALLATION OF ACS-41-1 AND AUTOMATIC TEMPERATURE CONTROLS.
- 10 ACTIVATE AIR CONDITIONING UNIT ACS-41-1, PERFORM TESTING AND BALANCING. ITEMS 11 THROUGH 15 SHALL NOT COMMENCE UNTIL ITEM NO. 10 HAS BEEN COMPLETED.
- 11 REMOVE EXISTING ACS-41-1 WITH ALL RELATED DUCTWORK AND PIPING.
- 12 INSTALLATION OF ACS-41N SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 13 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 14 INSTALL AIR CONDITIONING UNIT ACS-41N AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 15 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. ACTIVATE ACS-41N UNIT, PERFORM TESTING AND BALANCING.
THE FOLLOWING ITEMS RELATED TO ACS-41-9 SHALL BE IMPLEMENTED AS FOLLOWS:
- 16 INSTALL 80x54 DUCT INTERCONNECTING SUPPLY DUCTS OF ACS-41-9 AND ACS-41-5 AND TWO (2) VOLUME DAMPERS AS SHOWN ON CONTRACT DRAWINGS.
- 17 REMOVE EXISTING PREHEAT COILS AND ASSOCIATED PIPING AFTER REPLACEMENT COILS AND PIPING HAVE BEEN DELIVERED, INSPECTED AND APPROVED BY THE ENGINEER.
INSTALL PREHEAT COILS WITH ALL RELATED PIPING AND APPURTENANCES. THIS WORK SHALL BE PERFORMED DURING SEVERAL CONSECUTIVE WEEKENDS DURING THE SUMMER SEASON AS COORDINATED WITH THE ENGINEER.
- 18 REMOVE EXISTING COOLING COILS AND ASSOCIATED PIPING AFTER REPLACEMENT COILS AND PIPING HAVE BEEN DELIVERED, INSPECTED AND APPROVED BY THE ENGINEER.
INSTALL COOLING COILS WITH ALL RELATED PIPING AND APPURTENANCES. THIS WORK BE PERFORMED DURING THE THANKSGIVING AND CRISTMAS HOLIDAYS AS COORDINATED WITH THE ENGINEER.
- 19 REMOVE 80x54 INTERCONNECTING DUCT, RESTORE DISCHARGE DUCT OF ACS-41-9 AND ACS-41-5 TO THEIR ORIGINAL CONDITION.
- 20 ACTIVATE AIR CONDITIONING UNIT ACS-41-9, PERFORM TESTING AND BALANCING.

STAGING NOTES
41st FLOOR - SOUTH
TOWER ONE
DRAWINGS M-11 - M-15

- 1 REMOVE STAGE 1 SECTION OF EXISTING SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 REMOVE EXISTING 80x45 MAKE-UP AIR DUCT.
- 3 INSTALL EXHAUST FAN E-41-21 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 4 REMOVE EXISTING FAN E-41-21 AND RELATED DUCTWORK.
- 5 INSTALLATION OF ACS-41-3 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS ARE RELOCATED AS REQUIRED.
- 6 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 7 INSTALL ACS-41-3 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 8 REMOVE EXISTING REHEAT COILS RCS-41-5 AND RCS-41-8 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 9 COMPLETE INSTALLATION OF ACS-41-3 AND AUTOMATIC TEMPERATURE CONTROLS.
- 10 ACTIVATE AIR CONDITIONING UNIT ACS-41-3, PERFORM TESTING AND BALANCING. ITEMS 11 THROUGH 15 SHALL NOT COMMENCE UNTIL ITEM NO. 10 HAS BEEN COMPLETED.
- 11 REMOVE EXISTING ACS-41-3 WITH ALL RELATED DUCTWORK AND PIPING.
- 12 INSTALLATION OF ACS-41S SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 13 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 14 INSTALL AIR CONDITIONING UNIT ACS-41S AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 15 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. COMPLETE TESTING AND BALANCING AND ACTIVATE ACS-41S UNIT.

STAGING NOTES
75th FLOOR - WEST
TOWER TWO
DRAWINGS M-24 - M-27

- 1 REMOVE EXISTING STAGE 1 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 INSTALL EXHAUST FAN E-75-21 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 3 REMOVE EXISTING FAN E-75-21 AND RELATED DUCTWORK.
- 4 INSTALLATION OF ACS-75-4 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS ARE RELOCATED AS REQUIRED.
- 5 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 6 INSTALL ACS-75-4 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 7 REMOVE EXISTING REHEAT COILS RCS-75-1 AND RCS-75-2 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 8 COMPLETE INSTALLATION OF ACS-75-4 AND AUTOMATIC TEMPERATURE CONTROLS.
- 9 ACTIVATE AIR CONDITIONING UNIT ACS-75-4, PERFORM TESTING AND BALANCING. ITEMS 10 THROUGH 14 SHALL NOT COMMENCE UNTIL ITEM NO. 9 HAS BEEN COMPLETED.
- 10 REMOVE EXISTING ACS-75-4 WITH ALL RELATED DUCTWORK AND PIPING.
- 11 INSTALLATION OF ACS-75W SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 12 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 13 INSTALL AIR CONDITIONING UNIT ACS-75-W AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 14 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. COMPLETE TESTING AND BALANCING AND ACTIVATE ACS-75-W UNIT.

STAGING NOTES
75th FLOOR - NORTH
TOWER ONE
DRAWINGS M-16 - M-19

- 1 REMOVE EXISTING STAGE 1 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 INSTALL EXHAUST FAN E-75-21 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 3 REMOVE EXISTING FAN E-75-21 AND RELATED DUCTWORK.
- 4 INSTALLATION OF ACS-75-1 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS ARE RELOCATED AS REQUIRED.
- 5 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 6 INSTALL ACS-75-1 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 7 REMOVE EXISTING REHEAT COILS RCS-75-1 AND RCS-75-2 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 8 COMPLETE INSTALLATION OF ACS-75-1 AND AUTOMATIC TEMPERATURE CONTROLS.
- 9 ACTIVATE AIR CONDITIONING UNIT ACS-75-1, PERFORM TESTING AND BALANCING. ITEMS 10 THROUGH 14 SHALL NOT COMMENCE UNTIL ITEM NO. 9 HAS BEEN COMPLETED.
- 10 REMOVE EXISTING ACS-75-1 WITH ALL RELATED DUCTWORK AND PIPING.
- 11 INSTALLATION OF ACS-75N SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 12 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 13 INSTALL AIR CONDITIONING UNIT ACS-75-N AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 14 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. COMPLETE TESTING AND BALANCING AND ACTIVATE ACS-75-N UNIT.

STAGING NOTES
75th FLOOR - EAST
TOWER TWO
DRAWINGS M-28 - M-31

- 1 REMOVE EXISTING STAGE 1 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 INSTALL EXHAUST FAN E-75-22 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 3 REMOVE EXISTING FAN E-75-22 AND RELATED DUCTWORK.
- 4 INSTALLATION OF ACS-75-2 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS ARE RELOCATED AS REQUIRED.
- 5 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 6 INSTALL ACS-75-2 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 7 REMOVE EXISTING REHEAT COILS RCS-75-3 AND RCS-75-4 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 8 COMPLETE INSTALLATION OF ACS-75-2 AND AUTOMATIC TEMPERATURE CONTROLS.
- 9 ACTIVATE AIR CONDITIONING UNIT ACS-75-2, PERFORM TESTING AND BALANCING. ITEMS 10 THROUGH 14 SHALL NOT COMMENCE UNTIL ITEM NO. 9 HAS BEEN COMPLETED.
- 10 REMOVE EXISTING ACS-75-2 WITH ALL RELATED DUCTWORK AND PIPING.
- 11 INSTALLATION OF ACS-75E SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 12 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 13 INSTALL AIR CONDITIONING UNIT ACS-75-E AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 14 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. COMPLETE TESTING AND BALANCING AND ACTIVATE ACS-75-E UNIT.

STAGING NOTES
75th FLOOR - SOUTH
TOWER ONE
DRAWINGS M-20 - M-23

- 1 REMOVE EXISTING STAGE 1 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 2 INSTALL EXHAUST FAN E-75-22 WITH ALL RELATED DUCTWORK AND APPURTENANCES AS REQUIRED TO MAKE SYSTEM OPERATIONAL. ITEM 4 SHALL COMMENCE AFTER ITEM 3 IS COMPLETED.
- 3 REMOVE EXISTING FAN E-75-22 AND RELATED DUCTWORK.
- 4 INSTALLATION OF ACS-75-3 SHALL TAKE PLACE AFTER SLAB EXTENSION NO.1 ON TOP OF EXISTING SUBSTATION IS COMPLETED (SEE STRUCTURAL DRAWINGS) AND CHW PIPE SUPPORTS ARE RELOCATED AS REQUIRED.
- 5 INSTALL STAGE 1 SECTION OF SPILL AIR PLENUM AS SHOWN ON THE DRAWING.
- 6 INSTALL ACS-75-3 AND ASSOCIATED DUCTWORK, PIPING, APPURTENANCES AND CONTROLS.
- 7 REMOVE EXISTING REHEAT COILS RCS-75-5 AND RCS-75-6 WITH ASSOCIATED DUCTWORK AND PIPING AS REQUIRED FOR INSTALLATION OF NEW DUCTWORK AND ITS CONNECTION TO EXISTING RISERS.
- 8 COMPLETE INSTALLATION OF ACS-75-3 AND AUTOMATIC TEMPERATURE CONTROLS.
- 9 ACTIVATE AIR CONDITIONING UNIT ACS-75-3, PERFORM TESTING AND BALANCING. ITEMS 10 THROUGH 14 SHALL NOT COMMENCE UNTIL ITEM NO. 9 HAS BEEN COMPLETED.
- 10 REMOVE EXISTING ACS-75-3 WITH ALL RELATED DUCTWORK AND PIPING.
- 11 INSTALLATION OF ACS-75S SHALL TAKE PLACE AFTER SLAB EXTENSION NO.2 IS COMPLETED. SEE STRUCTURAL DRAWINGS.
- 12 REMOVE EXISTING STAGE 2 SECTION OF SPILL AIR PLENUM, SAFE-OFF OPENINGS.
- 13 INSTALL AIR CONDITIONING UNIT ACS-75-S AND ASSOCIATED DUCTWORK, PIPING APPURTENANCES AND CONTROLS.
- 14 INSTALL STAGE 2 SECTION OF SPILL AIR PLENUM TO MATCH EXISTING. COMPLETE TESTING AND BALANCING AND ACTIVATE ACS-75-S UNIT.

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THE PORT AUTHORITY
OF NEW YORK & NEW JERSEY

Peter L. Severney
ENGINEERING PROGRAM MANAGER / WORLD TRADE

Alfred Kroen
CHIEF MECHANICAL ENGINEER

No. Date Revision Approved

Engineering Department					
Design Division					
The World Trade Center					
Electrical/HVAC Upgrade Program					

TOWER ONE AND TWO
LOW VOLTAGE
SUBSTATIONS
CONSTRUCTION AND
INSTALLATION
MECHANICAL
STAGING NOTES

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A.B. E.E. S.W.
Designed by Drawn by Checked by

Date 5/1/95 Scale AS NOTED

Contract Number Drawing Number

WTC-802.071 M-2

I HEREBY CERTIFY THAT THIS IS A TRUE AND CORRECT
COPY OF ONE OF THE CONTRACT DRAWINGS CON-
STITUTING A PART OF THE CONTRACT NO. WTC-802.071
IN THE FORM IN WHICH SAID DRAWINGS EXISTED AT
THE TIME THE SAID CONTRACT WAS EXECUTED BY
THE PARTIES.
DATE 6/21/95 Sultan A. Aslam
DATE 8/15/95 Peter L. Severney
ENGINEER OF DESIGN